

From: [Miller, Garyg](#)
To: ["Hayter, Earl J ERDC-RDE-EL-MS CIV"](#)
Subject: RE: San Jacinto Model Studies
Date: Tuesday, July 25, 2017 3:37:00 PM

Great! Thanks Earl

Gary Miller
Remedial Project Manager
EPA Region 6 Superfund Division, TX/Ark Section
214-665-8318
miller.garyg@epa.gov

-----Original Message-----

From: Hayter, Earl J ERDC-RDE-EL-MS CIV [<mailto:Earl.J.Hayter@erdc.dren.mil>]
Sent: Tuesday, July 25, 2017 2:11 PM
To: Miller, Garyg <Miller.Garyg@epa.gov>
Subject: RE: San Jacinto Model Studies

Gary, my responses follow the >> signs below.

· Anchor QEA (AQ) recently ran the input files provided by USACE for the worst-case storm event (described in the USACE August 2016 Final Report) in our sediment transport model and the modeling results showed the existing cap should be stable under those conditions; however, the USACE report indicates there could be erosion over 80% of the cap area for the same storm. Based on USACE's previous review of AQ's modeling, can USACE identify any fundamental differences between its model framework and AQ's that can explain this discrepancy?

>> USACE included spatially and temporally varying waves in calculating the current- and wave-induced bed shear stresses. USACE used the Sandia-EFDC model for this simulation. Joe Gailani renamed the Sandia-EFDC model that was delivered by Sandia to CHL as LTFATE.

· AQ's understanding is the USACE sediment transport model framework is based on the AQ coarse grid long-term fate framework:

o Can USACE clarify how the USACE model was setup starting from the wave model, to the hydrodynamic, and finally the sediment transport models?

>> A new Cartesian grid was developed that included Galveston Bay and the San Jacinto River. The measured water surface elevations at the entrance to Galveston Bay was used as the downstream boundary condition. The record flow in the San Jacinto River (from October 1994) was added to the qser.inp file so that the peak flow from Lake Houston into the San Jacinto River occurred simultaneously as the peak stage due to Hurricane Ike. The CMS-Wave model was setup to simulate the waves in the model domain (see Appendix E in the USACE August 2016 Final Report). The output from the CMS-Wave model was interpolated onto the Cartesian grid. The bed properties and Sedflume results obtained by AQ were used to develop the input files for the SEDZLJ bed model contained in Sandia-EFDC (LTFATE).

o What input files were used from AQ, and which were modified?

>> The qser.inp and wser.inp files were used. USACE generated the other files, some of which were modified from AQ's files.

§ AQ understands how the hydrodynamic (flow and stage) input files are setup, and how the grid is setup:

o Were there any other changes to the upstream sediment load, the bedmap, or bed properties (particle diameters, bulk density, bed content)?

>> Not that I remember.

· Can USACE describe its sedtran model framework? Does the framework include bedload that might explain how it can predict high scour depths?

>> The USACE sediment transport model (Sandia-EFDC) uses the Craig Jones SEDZLJ bed model in which bedload is simulated for the noncohesive sediment classes. The model is run with the hydrodynamic and sediment transport modules dynamically linked with the bed morphology model activated. In this version of the SEDZLJ bed model, the type of sediment (i.e., cohesive or non-cohesive) bed in each grid cell is not specified as it is not static.

-----Original Message-----

From: Miller, Garyg [<mailto:Miller.Garyg@epa.gov>]

Sent: Thursday, July 06, 2017 5:54 PM

To: Hayter, Earl J ERDC-RDE-EL-MS CIV

Cc: Sanchez, Carlos; Foster, Anne

Subject: FW: San Jacinto Model Studies

Earl,

The San Jacinto PRPs have your input files, but not the executable and output files, regarding the Alternative 3N model study. They have asked the questions below - do you have any additional information/documents regarding these issues? Also, do you have an opinion regarding what would be necessary to answer these questions?

Thanks,

Gary Miller

Remedial Project Manager

EPA Region 6 Superfund Division, TX/Ark Section

214-665-8318

miller.garyg@epa.gov

· Anchor QEA (AQ) recently ran the input files provided by USACE for the worst-case storm event (described in the USACE August 2016 Final Report) in our sediment transport model and the modeling results showed the existing cap should be stable under those conditions; however, the USACE report indicates there could be erosion over 80% of the cap area for the same storm. Based on USACE's previous review of AQ's modeling, can USACE identify any fundamental differences between its model framework and AQ's that can explain this discrepancy?

- AQ's understanding is the USACE sediment transport model framework is based on the AQ coarse grid long-term fate framework:

- o Can USACE clarify how the USACE model was setup starting from the wave model, to the hydrodynamic, and finally the sediment transport models?

- o What input files were used from AQ, and which were modified?

- § AQ understands how the hydrodynamic (flow and stage) input files are setup, and how the grid is setup:

- o Were there any other changes to the upstream sediment load, the bedmap, or bed properties (particle diameters, bulk density, bed content)?

- Can USACE describe its sedtran model framework? Does the framework include bedload that might explain how it can predict high scour depths?